

Amendments to the Claims

1-2 (Cancelled)

3. (New) A method of determining radioactive nuclides comprising:

inputting a data of pulses incident to an α -ray detector in a computer;

obtaining and plotting a time distribution of the incident pulses by using a very short time measuring timer;

obtaining from the plotted time distribution of the incident pulses, the following whole generating probability $P(t)$ from a parent nuclide to a disintegrated product thereof by fitting the linear originated in a random event corresponding to the background and the non-linear originated in a correlated event of the parent nuclide-disintegrated product by using least squares method, the random event relating to disintegration of a long half-life nuclide and the correlated event relating to disintegration of a short half-life nuclide,

$$P(t) = \{ \alpha_t \cdot \exp(-\lambda t) \cdot \lambda + C \} dt$$

wherein,

$P(t)$: the probability of starting from an optional pulse and expiring at the event within a very short time dt after t milliseconds,

λdt : the probability of generating the correlated events within a very short time dt after t milliseconds,

$C dt$: the probability of generating the random events within a very short time dt after t milliseconds,

α_t : the probability that the events are caused by the correlated events;

subtracting the random events portion from the $P(t)$ to thereby extract the correlated events portion;

subtracting the thus extracted correlated events portion from the whole energy spectra containing objective nuclides to thereby lower the background due to the disintegration of the short half-life nuclides and reduce the detection limit value of the objective nuclides; and

determining the objective nuclides of long half-life nuclides by using pulse-height discrimination.